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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,402	03/28/2002	Tetsuya Akiyama	10873.866USWO	4966
23552	7590	11/02/2004		EXAMINER
MERCHANT & GOULD PC				AGUSTIN, PETER VINCENT
P.O. BOX 2903				
MINNEAPOLIS, MN 55402-0903			ART UNIT	PAPER NUMBER
			2652	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/089,402	AKIYAMA ET AL.	
	Examiner	Art Unit	
	Peter Vincent Agustin	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 March 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because on figures 6A & 6B, "singal" should be --signal--. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figure 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The

replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

Page 4, line 7 and page 10, line 22: "0.40" should be -- 0.40×10^{-6} -- or -- $0.40 \mu\text{m}$ --, and "0.68" should be -- 0.68×10^{-6} -- or -- $0.68 \mu\text{m}$ --.

Appropriate correction is required.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

6. Claims 1-6 are objected to because of the following informalities:

Claim 1, line 15; claim 3, line 14; and claim 6, line 15: "0.40" should be -- 0.40×10^{-6} -- or -- $0.40 \mu\text{m}$ --, and "0.68" should be -- 0.68×10^{-6} -- or -- $0.68 \mu\text{m}$ --.

Claim 2, line 2: "an optical head" should be --the optical head--.

Claim 2, line 2: "an optical disk device" should be --the optical disk device--.

Claim 2, lines 3-4: "an objective lens" should be --the objective lens--.

Claim 3, lines 16-17: "an optical" should be --the optical--.

Claim 4, line 2: "an optical" should be --the optical--.

Claim 4, line 2: "an optical disk device" should be --the optical disk device--.

Claim 4, lines 2-3: "an optical" should be --the optical--.

Claim 4, lines 4-5: "an objective lens" should be --the objective lens--.

Claim 5, line 3: "comprising," should be --comprising--.

Claim 5, line 4: "a laser" should be --the laser--.

Claims 2, 4 & 6 are dependent upon objected base claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 & 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanagihara et al. (JP 11-203710).

In regard to claim 1, Yanagihara et al. disclose an optical recording medium (Drawing 1) for recording, reproducing, or erasing information (paragraph 2, lines 2-3: "DVD-RAM disk which can perform rewriting") by irradiation with a laser beam (Drawing 3, element 11), comprising a disk-shaped transparent substrate and a recording layer formed on the substrate (paragraph 5), wherein information tracks (Drawing 1, elements 2 & 3) and addresses (a, b, c & d) are provided on the substrate, the information tracks including groove tracks (2) and land tracks (3) that are arranged alternately in the form of a spiral or concentric circles, each of the addresses indicating a position on the recording medium and being composed of uneven strings of pits (see Drawing 4(a), element 4), the strings of the pits are arranged so that center lines of the strings of the pits are shifted in a radial direction of the recording medium at a distance of

about one-half of a track pitch from center lines of the groove tracks and center lines of the land tracks (see Tp/2 on Drawing 4(a), 4(d) & 4(e), and a pit width W of the pits satisfies the relationship: $W = k * Tp / (\lambda / NA)$, $0.40 \leq k \leq 0.68$, with respect to a laser wavelength λ and a numerical aperture NA of an objective lens (Drawing 3, element 23) of an optical head of an optical disk device being used, and a track pitch Tp of the recording medium. In this reference, $W = 0.6 \mu\text{m}$ (paragraph 14, lines 2-3); $Tp = 0.6 \mu\text{m}$ (paragraph 13, lines 1-4); $\lambda = 351 \text{ nm}$ (paragraph 14, lines 6-7); and $NA = 0.6$ (paragraph 14, line 5). Substituting these values to the claimed equation will result in $k = 0.585$, which satisfies the claimed range.

Claim 3 has limitations that are similar to those of claim 1, thus it is rejected with the same rationale applied against claim 1 above.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2 & 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagihara et al. in view of Lee (US 5,784,354).

For a description of Yanagihara et al., see the rejection above. Furthermore, in regard to claims 2 & 4, Yanagihara et al. disclose that the optical head of the optical disk device being used has a numerical aperture of the objective lens of about 0.6 (paragraph 14, line 5), and the recording medium has a track pitch of about $0.62 \mu\text{m}$ (paragraph 13, lines 1-4). However,

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Yanagihara et al. do not disclose that the optical head has a laser wavelength of about 650 nm, and the pits have a pit width W that falls within the range of 0.23 μm to 0.39 μm .

Lee discloses a laser diode (figure 2, element 110) having a laser wavelength of 650 nm (column 6, lines 61-65). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have used the 650 nm laser of Lee for the optical head of Yanagihara et al., the motivation being to reproduce both CD and DVD, which have different densities, thereby enhancing device compatibility. NOTE: Substituting the $\lambda = 650 \text{ nm}$ taught by Lee to the equation taught by Yanagihara et al. yields a value of $W = 0.32 \mu\text{m}$, which satisfies the claimed range of 0.23 μm to 0.39 μm .

11. Claims 5 & 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto et al. (US 6,320,830) in view of Yanagihara et al.

In regard to claim 5, Tsukamoto et al. disclose an optical disk device (figure 1) in which information is recorded or reproduced, by irradiating an optical recording medium (11) with a laser beam (131), comprising: an optical head (13) for focusing the laser beam on the recording medium to obtain a reproduction signal using the laser beam reflected from the recording medium, a photodetector (135) provided in the optical head having light receiving parts divided into two parts in a direction parallel to tracks on the recording medium, a summing amplifier (16) for generating a sum signal of electric signals output from the two light receiving parts, a differential amplifier (18) for generating a difference signal of electric signals output from the two light receiving parts, a first address demodulating circuit (24, 22, 37 & 36: a case when element 36 is switched to receive the output of element 16) for demodulating address information using the sum signal, and a second address demodulating circuit (24, 22, 37, 36 &

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35: a case when element 36 is switched to receive the output of element 35) for demodulating address information using the difference signal. However, in regard to claim 5, Tsukamoto et al. do not explicitly disclose that the optical disk device is capable of erasing information.

Yanagihara et al. disclose an optical disk device which is capable of erasing information (see paragraph 2). It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have configured the device of Tsukamoto et al. to be capable of erasing information as suggested by Yanagihara et al., the motivation being to enable unlimited rewriting of data.

In regard to claim 6, Tsukamoto et al. disclose that the optical recording medium includes a disk-shaped transparent substrate and a recording layer formed on the substrate (inherent and well-known in the art), information tracks (figure 7, element 2) and addresses (1) are provided on the substrate, the information tracks including groove tracks (3) and land tracks (4) that are arranged alternately in the form of a spiral or concentric circles, each of the addresses indicating a position on the recording medium and being composed of uneven strings of pits (column 4, lines 48-50), the strings of the pits are arranged so that center lines of the strings of the pits are shifted in a radial direction of the recording medium at a distance of about one-half of a track pitch from center lines of the groove tracks and center lines of the land tracks (column 12, lines 39-61). However, in regard to claim 6, Tsukamoto et al. do not explicitly disclose that a pit width W of the pits satisfies the relationship: $W = k * Tp / (\lambda / NA)$, $0.40 \leq k \leq 0.68$, with respect to a laser wavelength λ and a numerical aperture NA of an objective lens of the optical head, and a track pitch Tp of the recording medium.

Yanagihara et al. disclose addresses composed of strings of pits, and a pit width W of the pits satisfies the relationship: $W = k * Tp / (\lambda / NA)$, $0.40 \leq k \leq 0.68$, with respect to a laser wavelength λ and a numerical aperture NA of an objective lens of the optical head, and a track pitch Tp of the recording medium. In this reference, $W = 0.6 \mu\text{m}$ (paragraph 14, lines 2-3); $Tp = 0.6 \mu\text{m}$ (paragraph 13, lines 1-4); $\lambda = 351 \text{ nm}$ (paragraph 14, lines 6-7); and $NA = 0.6$ (paragraph 14, line 5). Substituting these values to the claimed equation will result in $k = 0.585$, which satisfies the claimed range. It would have been obvious to one of ordinary skill in the art at the time of invention by the applicant to have employed the pit width equation taught by Yanagihara et al. to the optical recording medium of Tsukamoto et al., the motivation being to obtain a higher information recording density (see paragraphs 9-11).

Citation of Relevant Prior Art

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Birukawa et al. (US 5,422,874) teach optical disks having various track pitches. A case is cited where a pit width is $0.4 \mu\text{m}$, track pitch is $1.2 \mu\text{m}$, NA is 0.55, and wavelength is 830 nm. Substituting these values to the equation of claim 1 will yield a "k" value that satisfies the claimed range.

Takemura et al. (US 4,712,204) disclose a circuit having two address detectors: one for detecting an address from a first photodetector and another for detecting an address from a second photodetector.

Yoshida (US 5,666,336) discloses a CD-ROM drive where an address component represented by sub-code Q data is detected by an address detection circuit, and an address component represented by header address data is detected by another address detection circuit.

Ogata et al. (US 5,696,742) disclose an address signal generated by a first intermediate address generating means (comprising a differential amplifier and a high-pass filter), a second intermediate address generating means (comprising an adder amplifier and a high-pass filter), and an address generating means that receives the first and second intermediate address signals.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Vincent Agustin whose telephone number is 703-305-8980. The examiner can normally be reached on Monday-Friday 9:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on 703-305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Peter Vincent Agustin
Art Unit 2652
October 7, 2004

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10/14/04